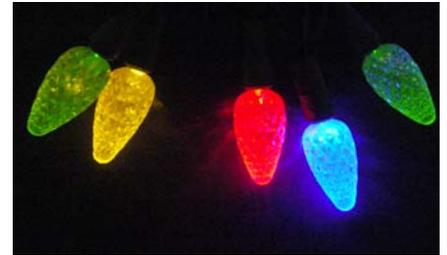


## Holiday Lights

*Many Americans love to decorate during the holidays with strings of lights, and most people currently use standard incandescent lights or mini-lights. However, these use a significant amount of energy and regularly involve costly bulb replacement. It often seems easier and cheaper to throw away a string of lights and buy a new one rather than buy replacement bulbs and figure out which bulbs are burned out.*

There are better ways to decorate your home or business. The following is a closer look at two energy efficient and practical options. LED and fiber optic trees are the newest additions to the ever-growing types of holiday lighting now available.



LED holiday lights

### LED Lights

Light Emitting Diode (LED) holiday lights are a new application for a mature technology. LED lights have a number of benefits over conventional lighting:

- **Energy-efficient:** 0.04 watts per bulb; mini-lights use ten times more energy and standard (C-7) bulbs use 100 times more energy
- **Long life span:** up to 100,000 hours used indoors, half that outdoors, and one manufacturer provides a 5-year warranty
- **Safety:** no chance of combustion from the cool temperature bulbs
- **Sturdy bulbs:** the epoxy lenses are virtually indestructible
- **Easily strung:** up to 25 strings can be connected end-to-end without overloading a typical household's electrical circuit

- **Lamp Replacement:** if a bulb does burn out, the other bulbs will stay lit, so you can easily identify and replace a bad bulb

The LED lights available this year have a much better selection of both colors and styles (globe, flame-tip, multi-faceted, and mini-light style) than last year. LED lights are now available in strings with 50, 60, 75, 100, 120, 180 and 240 bulbs, and come in red, green, blue, white and gold (pictured above).

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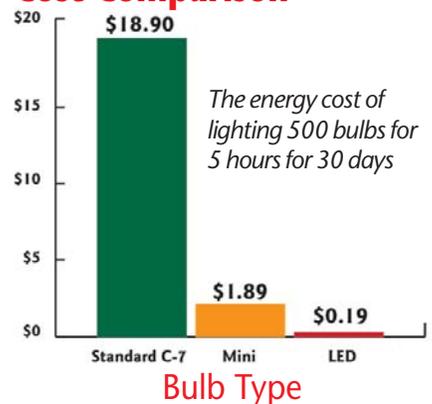
Factsheet developed by:

Washington State University Cooperative  
Extension Energy Program  
[www.energy.wsu.edu](http://www.energy.wsu.edu)



**Replacing standard holiday lights with LED lights reduces energy consumption by 99 percent and reduces the time spent hassling with burned-out bulb replacement.**

### Cost Comparison



## Fiber Optic Artificial Trees and Decorations

A product gaining popularity among consumers is an artificial tree with fiber optic lighting built into the tree. These trees use an incandescent bulb ranging from 5 to 20 watts, depending on the size of the tree. Light is transmitted from a single bulb (so there's only one bulb to replace) through hundreds of tiny fibers and emitted along each branch of the tree. Most trees come equipped with a rotating color wheel that changes the color emitted from the fibers.

Fiber optic lights are cool to the touch, as only light is transmitted from the fiber and not heat. The incandescent light source is located in the base of the tree with ventilating holes that must not be covered. The cost for such trees ranges from \$20 for a 2-3-foot tree to over \$400 for large trees. Fiber optics is also now used in decorations such as Santa or angel figurines, stars, topiaries, and poinsettias.



Fiber Optic Tree

## Conclusion

In addition to energy cost savings, there are other good reasons to purchase LED lights anyway. These include avoiding the hassle and cost of replacing burned-out bulbs, supporting a new efficient technology, and avoiding adding more plastic to the landfill each year. If you want to purchase an artificial tree, you would do well to consider purchasing a fiber optic model. If you are considering other holiday lighting options, consider both purchase and energy costs.

## Holiday Lighting Costs

Light Type	Purchase Cost	Energy Use (W)	Total 5-yr Cost
Standard C-7	\$55	500	\$134
Mini Lights	\$18	120	\$42
LED Lights	\$30	12	\$31
Fiber Optic Lights	n/a *	20	\$1

### Assumptions:

- Because standard incandescent bulbs are much larger and brighter, fewer are needed for a tree. This table assumes an 8-foot tree with three 100-bulb strings of mini or LED lights, or five 25-bulb strings of C-7 lights.
- 6.3 cents per kWh.
- Prices and quality vary widely among holiday lighting products, especially for mini-lights which now range from \$3-\$12. The prices shown above and the assumed replacement period of 2.5 years for mini- and C-7 lights represent the experience of the authors with holiday lighting products sold in the Pacific Northwest. The purchase costs shown above are the number of strings assumed rather than for a single string.
- Lighting is operated 5 hours/day, 30 days per year.

\* Cost shown for fiber optic lights is for energy use only, since the cost of the lighting and the cost of the tree cannot be separated.

## Retail Sources of LED Lights

- Albertsons
- Rite Aid
- True Value Hardware
- Ace Hardware
- Target
- Costco
- On-line companies

## Retail Sources of Fiber Optic Trees

- K Mart
- Wal-Mart
- Target
- Ace Hardware
- True Value Hardware
- Lowe's
- Coast-to-Coast Hardware
- On-line companies

## Additional Information

<http://www.foreverbright.com/>  
[http://www.gelighting.com/na/pressroom/pr\\_decorating.html](http://www.gelighting.com/na/pressroom/pr_decorating.html)  
[http://www.gelighting.com/na/pressroom/pr\\_safety\\_tips.html](http://www.gelighting.com/na/pressroom/pr_safety_tips.html)  
<http://www.bronners.net/noveltylights.html>  
<http://www.christmas-lights-online.com/store/Home.asp>  
<http://www.christmasdepot.com/menu.cgi?S=Fiber&Max=>  
<http://www.egismos.com/led/christmaslamp.htm>  
<http://www.christmaslightsetc.com/categorydetail.asp?CategoryID=58&CatalogID=1>  
<http://www.sivalinc.com/hday6.html>  
<http://www.homebrite.com>

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